Ohkay Owingeh scientist Denise Thronas helps move CMRR project forward

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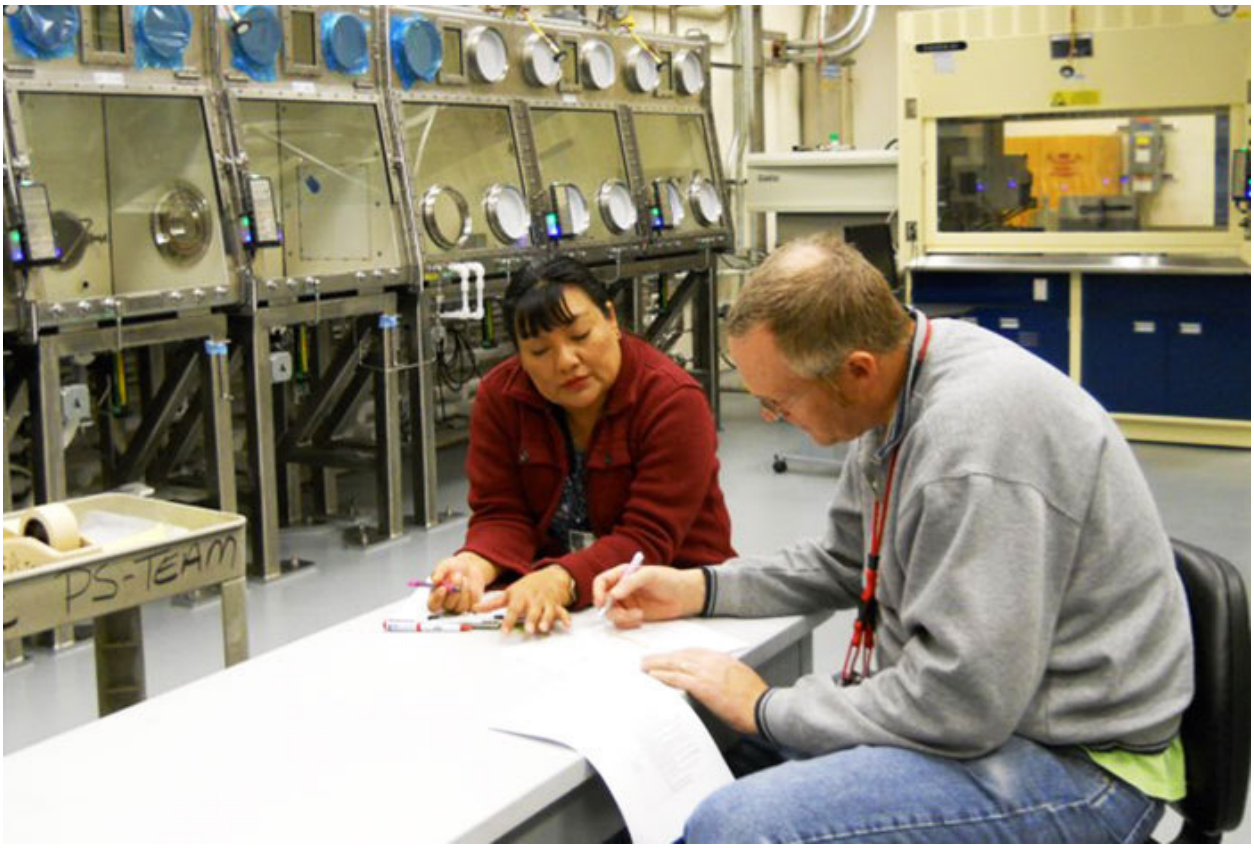

Native American scientist Denise Thronas was born at Ohkay Owingeh and still resides in the pueblo, but she also is proud of her Taos Pueblo heritage. After graduating from Española Valley High School, Thronas attended New Mexico State University, first pursuing a degree in chemical engineering but later switching to biochemistry.

Since joining Los Alamos National Laboratory 22 years ago, Thronas has worked on a variety of research and manufacturing initiatives. Most recently, she assumed the roles of “Transition to Operations” and “Control Account” manager for a Chemistry Division team that is part of the Laboratory’s Chemistry and Metallurgy Research Replacement (CMRR) project.

“Two of the CMRR project’s three phases have been fully completed so far,” Thronas said. “The Radiological Laboratory and Utility Office Building (RLUOB) was finished in 2010, and the RLUOB equipment installation’s first phase ended in 2013.”

But the CMRR’s third phase—the design and construction of a new nuclear facility—encountered budget delays at the Congressional level and eventually was cancelled altogether.

Creative solutions

To maintain the CMRR’s analytical chemistry and materials characterization capabilities in the absence of the new nuclear facility, the National Nuclear Security Administration developed a plutonium infrastructure strategy that maximizes use of the RLUOB’s recently constructed laboratories and in addition repurposes laboratories in Los Alamos’ Plutonium Facility by equipping them with analytical chemistry and materials characterization capabilities.

“Analytical chemistry is just what it sounds like; it studies the chemical components of natural and artificial materials,” Thronas explained. “Materials characterization, on the other hand, refers to the process by which a material's structure and properties are probed and measured.”

To assist with the Plutonium Facility’s repurposing effort, Thronas and her team often have to come up with creative solutions and use their experience in nuclear operations to make informed decisions.

“Finding answers to tough obstacles is challenging and exciting,” Thronas said. “I’m proud of the contributions my team and I have made to the future of Los Alamos. I started my career in analytical chemistry and have strong roots there.”

Instrument leads to unexpected events

Sometimes, Thronas discovered, finding the right solution can even include pulling a European equipment expert out of retirement and bringing him home for the Thanksgiving holiday.

“This particular situation came up about three years ago,” Thronas recalled, “but it illustrates how complicated even the purchase and installation of a single piece of machinery can be.”

The culprit in question was a “gas mass spectrometer”—an analytical instrument that combines gas chromatography and mass spectrometry functions in order to identify different substances within a test sample.

“The gas mass spectrometer was built in Germany by Thermo Fisher Scientific, Inc. and their German gas mass spectrometer expert, Herbert Finke,” Thronas said. “But we had three problems from the start. First, the installation was delayed because of construction; secondly, the space for the equipment was too tight and required on#site modifications; and finally Herbert Finke, who had designed the instrument himself, had recently retired.”

Thronas arranged for Finke to come out of retirement and travel to Los Alamos from Europe.

“We had anticipated that it would take Herbert one week to install the machine and after that he would need another week for testing,” Thronas noted. “But we ended up having

to wait for the utilities to get installed, and I had to extend Herbert's stay by another week as a result, which partially placed us into the Lab's Thanksgiving break."

Because Finke did not know anyone in New Mexico, Thronas invited him to join her family in Ohkay Owingeh for the Thanksgiving meal.

"We had a wonderful time talking about where Herbert grew up," Thronas said, "and we told him about our lives and traditions, especially raising cattle. My family still speaks about Herbert's visit and the analytical instrument that brought a foreign visitor to our home."

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